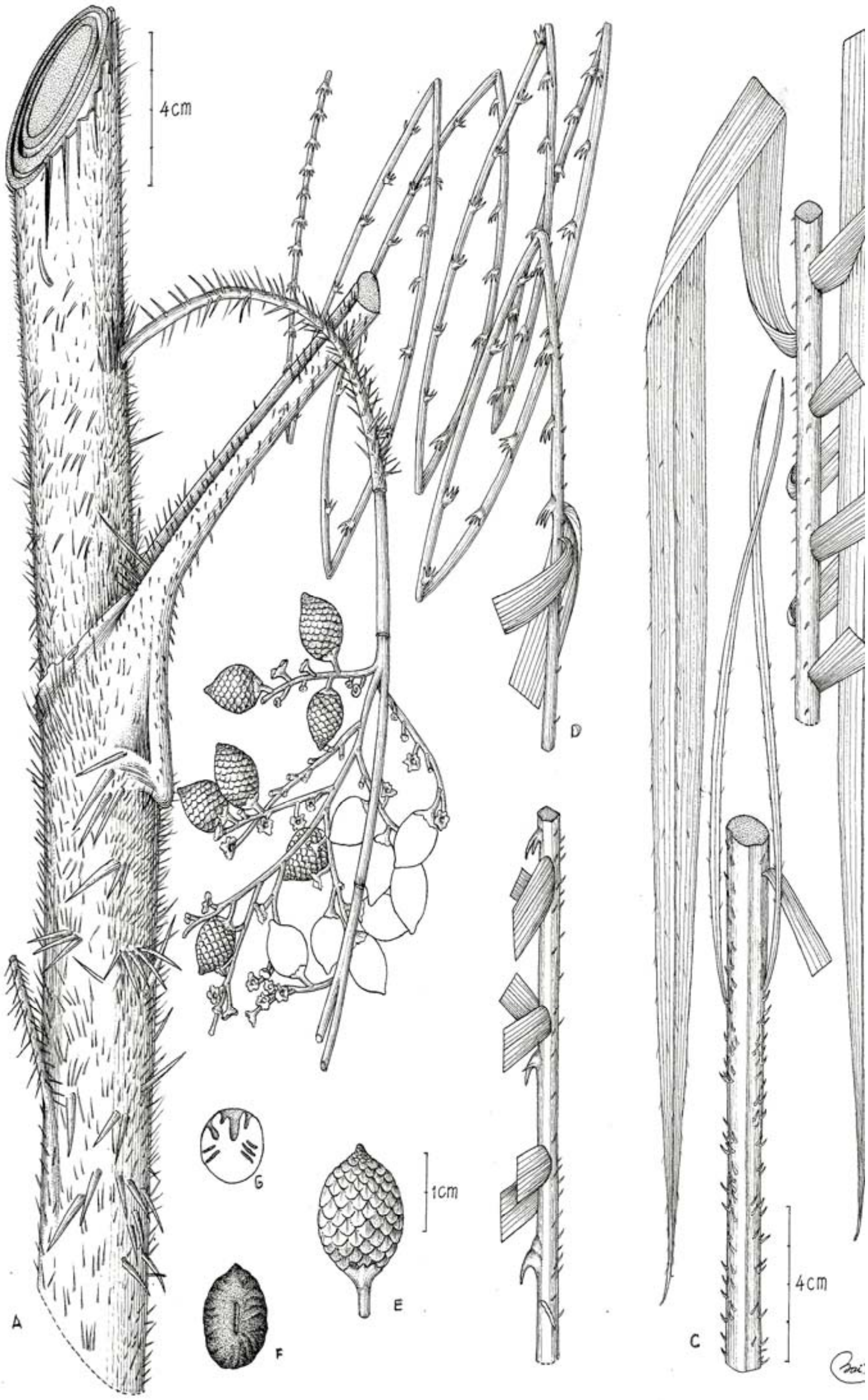
LIPI

A JOURNAL ON TAXONOMIC BOTANY, PLANT SOCIOLOGY AND ECOLOGY



REINWARDTIA

13 (1)

THE STATUS OF SEMEIOCARDIUM ZOLL. (BALSAMINACEAE)

Received April 24, 2009; accepted June 6, 2009

NANDA UTAMI
Herbarium Bogoriense, Botany Division, Research Center for Biology–LIPI, Jl. Raya Jakarta Bogor Km 46, Cibinong 16911, Indonesia. E-mail: utami_16002@yahoo.com

ABSTRACT
UTAMI, N. 2009. The status of *Semeiocardium* Zoll. (*Balsaminaceae*). *Reinwardtia* 13(1): 21–23. — On the basis of comparison with other characters of two subgenera of the genus *Impatiens, Semeiocardium* Zoll. is proposed to be best treated as a subgenus of *Impatiens* (*Balsaminaceae*). Subgenus *Semeiocardium* (Zoll.) N. Utami is distinguished from the other two subgenera in the number of locular ovary and its connate wing petals. Subgenus *Semeiocardium* has 20 species in four sections of *Impatiens* in the sense of Warburg & Reiche (1896). There are 14 species of *Impatiens* in section *Microcentron* Warb., 3 species of section *Macrocentron* Warb, 2 species of section *Brachycentron* Warb., and 1 species of section *Brevicalcaratae* Warb.

Key words: *Balsaminaceae*, *Impatiens, Semeiocardium.*

ABSTRAK
UTAMI, N, 2009. Status *Semeiocardium* Zoll. (*Balsaminaceae). Reinwardtia* 13(1): 21–23. — Berdasarkan perbandingan karakter dari ke dua anak marga *Impatiens, Semeiocardium* Zoll. diajukan untuk diperlakukan sebagai anak marga *Impatiens* (*Balsaminaceae*). Anak marga *Semeiocardium* (Zoll.) N. Utami dapat dibedakan dari kedua anak marga *Impatiens* lainnya berdasarkan jumlah ruang bakal buah dan perlekatan sayap daun mahkota. Anak marga *Semeiocardium* mempunyai anggota 20 jenis dan 4 seksi *Impatiens* Warburg & Reiche (1896). Mereka adalah 14 jenis dari seksi *Microcentron* Warb., 3 jenis dari seksi *Macrocentron* Warb., 2 jenis dari seksi *Brachycentron* Warb. dan 1 jenis dari seksi *Brevicalcaratae* Warb.

Kata kunci: *Balsaminaceae*, *Impatiens, Semeiocardium.*

INTRODUCTION

Warburg & Reiche (1896) classified the genus *Impatiens* (*Balsaminaceae*) into two subgenera: subgen. *Caulimpatiens* Warb. (= subgen. *Impatiens*) and subgen. *Acaulimpatiens* Warb. on the basis of presence or absence of cauline leaves. These two subgenera were also divided into 14 sections on the basis of phyllotaxy, inflorescence and spur characters. Subgenus *Acaulimpatiens* Warb. has only 2 sections and subgen. *Impatiens* 12 sections. The distribution area of subgen. *Impatiens*, which consists of more than 850 species, is extensive, covering Eurasia, Africa and North America, while that of subgen. *Acaulimpatiens* to which only ten or so species belong, is confined to the Western Ghats in India and Sri Lanka.

Backer & Backhuizen van den Brink (1963) recognized three genera in the family *Balsaminaceae*, namely *Hydrocera* Bl. ex Weight & Arnott, *Impatiens* L. and *Semeiocardium* Zoll. *Hydrocera triflora* looks similar to *Impatiens*. However, there are two basic differences in flower and fruit structure that clearly separate the two genera. In *Hydrocera* there is a full complement of 5 sepals and 5 petals with all the petals being free from one another. In *Impatiens* the sepals are usually, if not always 3 in number and the lower 4 petals are partially connate into lateral pairs (united lateral petals) with the upper or dorsal petal being entirely free. Whereas *Semeiocardium* is characterized by its 4 lateral sepals in 2 pairs, the outer (lower) pair connate and enclosing the lower sepal and spur, sepals oval, asymmetric, apiculate, with inner (upper) pair hidden by the outer pair, free, linearly lanceolate; lower sepal navicular, abruptly constricted into a short in curved bifid spur; dorsal petal cucullate; lateral united petals connate; and ovary 4 locular.

Based on the above characters it seems that *Semeiocardium* is closely related to *Impatiens*, that is why Grey−Wilson (1989) proposed that *Semeiocardium* be reduced as a synonym of *Impatiens*. This idea supported Shimizu (1987) suggestions in transferring *Semeiocardium arriensii* to *Impatiens* as *I. arriensii* (Zoll.) T. Shimizu. So *Semeiocardium* is now treated as a synonym of *Impatiens* (Grey−Wilson 1989).

MATERIALS AND METHODS

During the revision of the genus *Impatiens*, the author examined about 100 species and 14 sections of *Impatiens* in the sense of Warburg and Reiche's (1896) system, collected from Indonesia, Thailand, India, China and Japan. This study is done by using scanning electron microscope (SEM). We also observed floral characters, chromosome numbers and seedling morphology.

RESULTS AND DISCUSSION

During the study of *Impatiens* from Thailand, China and Indonesia, Shimizu *et al.* (1996) and Utami (1996) found that *Semeiocardium* is not the only member with a 4−locular ovary and connate wing petals. There are some species of *Impatiens* having such characters. Examples include *Impatiens bunackii* T. Shimizu of Thailand, *I. alboflava* Miq. of Indonesia and several other species. Grey–Wilson (1989) also mentioned that several *Impatiens* from Thailand and Peninsular Malaysia closely resemble *S. arriensii*, so that he proposed to treat *Impatiens harmandii* as subspecies of *I. arriensii,* and *I. macrosepala* as a synonym of *I. arriensii.*

Throughout the study of seed coat morphology of the genus *Impatiens*, the available data show that the seed coat types in general support the classical classification of the genus *Impatiens,* especially concerning the Southeast Asian species. The seed coat character agrees well with other morphological characters such as the four carpellate ovaries, connate winged petals and seed coat pilose with long hairs or granulate and finely granular to form natural groups. Because of that it is suggested that the group which has four carpellate ovaries, connate winged petals and seed coat pilose with long hairs or granulate and finely granular should be distinguished as a different subgenus. These characters are found in 14 species of *Impatiens* section *Microcentron* Warb., namely *I. arriensii* (Zoll.) T. Shimizu, *I. bunnackii* T. Shimizu, *I. charanii* T. Shimizu, *I. harmandii* T. Shimizu, *I. kanburiensis* T. Shimizu, *I. macrosepala* Hook.f., *I. saraburiensis* T. Shimizu, *I. hongsonensis* T. Shimizu, *I. kerriae* Craib, *I. namkatensis* T. Shimizu, *I. psittacina* Hook.f., *I. verucifer* Hook.f., *I. boni* Hook.f., and *I. parishii* Hook.f. Three species of *Impatiens* section *Macrocentron* Warb., there are: *I. santisukii* T. Shimizu, *I. muscicola* Craib. and *I. siamensis* T. Shimizu, 2 species of *Impatiens* section *Brachycentron* Warb., such as *I. alboflava* Miq., *I. larsenii* T. Shimizu and 1 species of *Impatiens* section *Brevicalcaratae* Warb. is *I. mirabilis* Hook.f. The distribution of this subgenus is restricted to South Asia, from South China to South Indonesia.

Comparison of floral morphology, chromosome numbers, seedling and seed coat characters, in several sections of Warburg and Reiche's classification suggests that it would be appropriate to recognize a third subgenus, namely *Impatiens* subgenus *Semeiocardium* (Zoll.) N. Utami *stat. nov*.

Impatiens* subgenus *Semeiocardium (Zoll.) N. Utami *stat. nov.*

Basionym: *Semeiocardium* Zoll. Natuurk. Tijdschr. Ned. Ind. 17 : 245. 1858. Type : *I. arriensii* (Zoll) T. Shimizu, Madura, Zollinger 3956 (Holotype− L).

Distribution. Thailand and Indonesia.

Ecology. Limestone areas.

Notes. The following characters are important as diagnostic characters to distinguish among the subgenera (Table. 1).

Table 1. Characters to distinguish the three subgenera of *Impatiens*.

Subgenus	Locular number in ovary	Lateral united petals	Seed coat type	Cauline leaves
Impatiens	5	free	variation	present
Acaulimpatiens	5	free	variation	absent
Semeiocardium stat. nov.	4	connate	Pilose with long hairs or, granulate of finely granular	present

ACKNOWLEDGMENT

I would like to thank to Prof. Dr. Dan H. Nicolson and Dr. Jun Wen of Department of Botany, US National Herbarium, National Museum of Natural History, Smithsonian Institution for reviewing this manuscript.

REFERENCES

BACKER, C.A. & BACKHUIZEN VAN DEN BRINK Jr, R.C.. 1963. *Flora of Java* I: 248−251, Nordhoff Groningen.

GREY-WILSON, C. 1989. *Semeiocardium* Zoll.; Is it a good genus? Studies in *Balsaminaceae:* IX. *Kew Bull*. 44 (1): 107−113.

UTAMI, N. 1996. Taxonomy of the genus *Impatiens* (*Balsaminaceae*) based on seed coat morphology. Ph.D thesis (Unpublished).

SHIMIZU, T. 1987. A note on the distribution of the genus *Impatiens* (*Balsaminaceae*) in Southeast Asia. *Acta Phytotax. Geobot*. 38: 53 – 57 (In Japanese).

SHIMIZU, T., TAKAO, S., UTAMI, N. & TAKAO, A. 1996. Anatomical of floral organs and its taxonomic significance in the genus *Impatiens* (*Balsaminaceae*), with special reference to subgen. *Acaulimpatiens. Phytomorphology*, 46(3): 253−266.

WARBURG, O. & REICHE, K. J. 1896. *Balsaminaceae.* Engler's Nat. Pflanzenfam. Teil III, Alstchitung 5: 383−392.